

**LPDES PERMIT NO. LA0003280 (Agency Interest No. 2062)**

**LPDES FACT SHEET and RATIONALE  
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM  
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA**

- I. Company/Facility Name:** Air Products & Chemicals, Inc.  
New Orleans Facility  
14700 Intracoastal Drive  
New Orleans, Louisiana 70129
- II. Issuing Office:** Louisiana Department of Environmental Quality (LDEQ)  
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**Date Prepared:** December 7, 2005

**IV. Permit Action/Status:**

**A. Reason For Permit Action:**

Reissuance of a Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46\*.

- \* In order to ease the transition from NPDES to LPDES permits, dual regulatory references are provided where applicable. The LAC references are the legal references while the 40 CFR references are presented for informational purposes only. In most cases, LAC language is based on and is identical to the 40 CFR language. 40 CFR Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903 and will not have dual references. In addition, state standards (LAC Chapter 11) will not have dual references.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

- B. NPDES permit:           Effective Date – September 16, 1986  
  Expiration Date – September 15, 1991

EPA has not retained enforcement authority.

- C. Current/updated LPDES application received on December 23, 2004.  
Updated/additional information submitted via an email dated January 24, 2006.
- D. Permit History: The Air Products & Chemicals / New Orleans facility is currently operating under its administratively extended 1986 NPDES permit. EPA issued the facility a renewal permit on September 28, 1991. However, the permittee was appealed and a hearing request was never acted upon by EPA. Following the appeal, the following Administrative Orders were issued by EPA: VI-90-108 – April 5, 1990, VI-92-0336 – September 22, 1992, and CWA-6-0055-00 – April 13, 2000. All other conditions of the September 1986 permit were continued and are still in effect.

**V. Facility Information:**

- A. Location – 14700 Intracoastal Drive, New Orleans, Orleans Parish  
(Latitude 30°01'44", Longitude 89°54'01").
- B. Applicant Activity - According to the application, Air Products and Chemicals is an industrial gas manufacturer.

The New Orleans facility has four Hydrogen plants (H<sub>2</sub> Plants A, B, C and D), two Carbon Dioxide plants (CO<sub>2</sub> Plants A and B), and an air separation plant. The facility produces H<sub>2</sub> and CO<sub>2</sub> via reformation of steam and pipeline supplied natural gas, and it produces Oxygen (O<sub>2</sub>), Nitrogen (N<sub>2</sub>) and Crude Argon by cryogenic separation of ambient air. The facility also transfers Anhydrous HCl from railcars to individual tube trailers and "Y" cylinders.

The facility was previously permitted for the manufacturing of Ammonia. However, the former ammonia plant ceased operation and was converted into the "C" H<sub>2</sub> plant, which went online in 1995. In November of 2003, the facility added a fourth H<sub>2</sub> plant (H<sub>2</sub> Plant D).

As per the December 23, 2004 LPDES permit application, below is the average production for the calendar year 2003 and the projected production for calendar year 2004:

<u>Process</u>	<u>Production (1000 lbs/day)</u>
Carbon Dioxide	400
Oxygen and Nitrogen	294.7
Hydrogen	345.4
Crude Argon	7.6
HCl Transfill	15.4

Of all the manufactured products at the New Orleans facility, only the Oxygen and Nitrogen production is guideline regulated (40 CFR 415 Subpart AW). The effluent guidelines have subparts for Carbon Dioxide production (Subpart AF) and Hydrogen production (Subpart AO). However, the Carbon Dioxide subpart is reserved. The Hydrogen production category (Subpart AO) applies to the production of hydrogen as a refinery by-product. The hydrogen that is produced at the New Orleans facility is not a refinery by-product.

The permittee plans to route sanitary wastewater from the facility to the Sewerage and Water Board of New Orleans sanitary sewer collection system. Outfall 101 has been established such that when connection to the sewerage and water board is complete, the permittee will no longer be required to submit DMR data for that outfall.

The permittee also plans to reroute Outfall 001 directly into Michoud Canal. The outfall currently discharges to a roadside ditch that runs along Intracoastal Drive thence to Maxent Canal thence to the Intracoastal Waterway.

The facility has a Multisector Stormwater General Permit (LAR05N094) to cover most of the stormwater from the New Orleans site.

- C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903)

<u>Guideline</u>	<u>Reference</u>
Inorganic Chemicals Manufacturing	40 CFR 415 Subpart AW
Inorganic Chemicals Manufacturing	40 CFR 415 Subpart AF (reserved)

Other sources of technology based limits:

- Best Professional Judgement
- LPDES Class I Sanitary General Permit (LAG530000)

- LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6)

- D. Fee Rate -
1. Fee Rating Facility Type: Major
  2. Complexity Type: IV
  3. Wastewater Type: III
  4. SIC code: 2813
- E. Continuous Facility Effluent Flow - 1.17 MGD

**VI. Receiving Waters:** Existing – Roadside ditch thence to Maxent Canal thence to Intracoastal Waterway  
Proposed – Michoud Canal

Existing – Roadside ditch thence to Maxent Canal thence to the Intracoastal Waterway

- A. TSS (15%), mg/L: 4.43  
B. Average Hardness, mg/L CaCO<sub>3</sub>: 1,655  
C. Critical Flow, cfs: 0.1  
D. Mixing Zone Fraction: 1  
E. Harmonic Mean Flow, cfs: 1  
F. River Basin: Pontchartrain, Segment No.: 041601  
G. Designated Uses:  
primary contact recreation, secondary contact recreation, fish and wildlife propagation, oyster propagation

Information based on recommendations from the Engineering Section. Hardness and 15% TSS data come from ambient sampling site # 1064, 1.4 miles NE of Meraux, 7.6 miles Southeast of New Orleans Lakefront Airport, and 1.27 nautical miles from Bayou Bienvenue Flood Control Structure. It is located on the Intracoastal Waterway at the New Orleans Public Service gas pipeline crossing.

Proposed – Michoud Canal

- A. TSS (15%), mg/L: 4.43  
B. Average Hardness, mg/L CaCO<sub>3</sub>: 1,655  
C. Critical Flow, cfs: 29.4  
D. Mixing Zone Fraction: 1  
E. Harmonic Mean Flow, cfs: 88.2  
F. River Basin: Pontchartrain, Segment No.: 041601

G. Designated Uses:

primary contact recreation, secondary contact recreation, fish and wildlife propagation, oyster propagation

Information based on recommendations from the Engineering Section. Hardness and 15% TSS data come from ambient sampling site # 1064, 1.4 miles NE of Meraux, 7.6 miles Southeast of New Orleans Lakefront Airport, and 1.27 nautical miles from Bayou Bienvenue Flood Control Structure. It is located on the Intracoastal Waterway at the New Orleans Public Service gas pipeline crossing.

**VII. Outfall Information:**

Outfall 001

- A. Type of wastewater – The continuous discharge of previously monitored sanitary wastewater from Internal Outfall 101(\*1), reverse osmosis reject water, excess reverse osmosis permeate, cooling tower blowdown, boiler blowdown, demineralizer regeneration, cooling tower side-stream filter backwash, condensate (from the CO<sub>2</sub> plants and air separation plant), scrubber water, stormwater runoff, equipment wash waters, air conditioning condensate, steam condensate, service lines leaks, fire protection wastewater and hydrostatic testing waters.

(\*1) The permittee proposes to have all of its sanitary wastewater routed to the local POTW. Once this is accomplished, sanitary wastewater will no longer be routed to Outfall 101 thence to Final Outfall 001.

- B. Location – Existing: At the point of discharge from the surface impoundment prior to combining with waters of the roadside ditch (Latitude 30°01'40", Longitude 89°45'03").  
Proposed: At the point of discharge from the wastewater sump prior to combining with the waters of Michoud Canal (Latitude 30°01'42", Longitude 89°54'23").
- C. Treatment – Settling, pH adjustment, oil booms
- D. Flow – Continuous, 1.17 MGD
- E. Receiving waters – Existing: Roadside ditch thence to Maxent Canal thence to the Intracoastal Waterway  
Proposed: Michoud Canal

- F. Basin and segment – Pontchartrain Basin, Segment 041601
- G. Effluent data – See attached pages from the December 23, 2004 LPDES permit application (Appendix A).

Outfall 101

- A. Type of wastewater – Sanitary wastewater (\*1)
  - (\*1) The permittee proposes to have all of its sanitary wastewater routed to the local POTW. Once this is accomplished, sanitary wastewater will no longer be routed to Outfall 101.
- B. Location – At the point of discharge from the package treatment plant prior to combining with other waters in the surface impoundment. (Latitude 30°01'40", Longitude 89°45'03").
- C. Treatment – Extended aeration and chlorination
- D. Flow – Intermittent, 0.005 MGD
- E. Receiving waters – Existing: To Final Outfall 001 thence to a roadside ditch thence to Maxent Canal thence to the Intracoastal Waterway  
Proposed: Michoud Canal
- F. Basin and segment – Pontchartrain Basin, Segment 041601
- G. Effluent data – No effluent data was submitted for this outfall. Sanitary wastewater was not covered by the previous NPDES/LPDES permit.

Outfall 002

- A. Type of wastewater – The intermittent discharge of overflow from the wastewater sump (\*1) including primarily stormwater, but potentially including the following wastewaters: Previously monitored sanitary wastewater, reverse osmosis reject water, excess reverse osmosis permeate, cooling tower blowdown, boiler blowdown, demineralizer regeneration, cooling tower side-stream filter backwash, condensate, scrubber water, equipment wash waters, air conditioning condensate, steam condensate, service lines leaks, fire protection wastewater and hydrostatic testing waters.

- (\*1) The wet-weather pumping system for the new sump/pump station for the proposed relocation of Outfall 001 will be able to handle the first flush generated by a 1-inch storm having a 30-minute duration. However, storm events with greater intensity/duration may result in the generation of flows that would be in excess of the wet-weather pumping system capacity. As a result, an overflow outfall has been incorporated in the permit to account for those instances where excess stormwater may be discharged to the roadside ditch along Intracoastal Drive once the first flush has been pumped to the Michoud Canal. Please note that the discharge route of the overflow outfall will be the same as the existing discharge location of Outfall 001.
- B. Location – At the point of overflow discharge from the wastewater sump prior to combining other waters (Latitude 30°01'40", Longitude 89°45'03").
- C. Treatment – None
- D. Flow – Flow is intermittent
- E. Receiving waters – To a roadside ditch thence to Maxent Canal thence to the Intracoastal Waterway
- F. Basin and segment – Pontchartrain Basin, Segment 041601
- G. Effluent data – This outfall is proposed so no effluent data is available.

#### **VIII. Proposed Permit Limits and Rationale:**

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. CHANGES FROM THE PREVIOUS PERMIT

1. Outfall 001 – Several changes have been made to Outfall 001:
  - a. The process waters, utility waters and miscellaneous waters have been identified individually in the permit.
  - b. Changes have been made to the biomonitoring requirements in accordance with current policy, and two sets of dilution series have been established in the permit based upon the existing discharge location and the proposed discharge location.
  - c. Ammonia limitations have been reduced because the facility ceased ammonia manufacturing operation in 1994. Allocations have been established for ammonia bearing wastewaters.
  - d. Effluent limitations for COD, TSS and Oil and Grease have changed based upon flow and production information provided in the Dec. 23, 2004 LPDES permit application.
  - e. A compliance schedule has been added to the permit for the relocation of the Outfall 001 discharge point/receiving waterbody.
  - f. Zinc monitoring and limitations have been removed from the permit. In the previous permit, Zinc limitations were based upon water quality. In the December 23, 2004 permit application, the permittee calculated long term averages for Zinc based upon the last two years of reporting. The highest value among 312 data points reported during that period was below the permit effluent limitation. Further, the only permit exceedance that has occurred during the last 5 years was 8.3 lbs/day, which was reported on Oct. 31, 2000. According to new water quality screens (based upon current water quality implementation strategies), total zinc demonstrated no reasonable potential for violation of water quality standards. The value of the previously reported permit excursion from October 31, 2000, was well below the new calculated water quality limitations, which are 14.99(Avg) : 35.59 (Max) lbs/day. For these reasons, Zinc limitations have been removed from the permit.
  - g. The monitoring frequencies for Oil & Grease, TSS, COD and Ammonia have been reduced to 1/week.
2. Outfall 101 – In the renewal permit an internal outfall for sanitary wastewater has been added in accordance with current office practices.
3. Outfall 002 – This proposed outfall has been added to the permit. The permittee requested that this outfall be added to the permit for periods of overflow of the wastewater sump at Outfall 001 during periods of heavy rainfall. The new system for the relocated Outfall 001 will be designed with two pumping systems: one to handle routine, dry-weather flows, and a second to handle wet-weather flows. Outfall 002 has been added so that excess stormwater may overflow into the roadside ditch. This



outfall will not discharge until after the first flush has been pumped to the Michoud Canal. This outfall is not anticipated to discharge very frequently.

B. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED  
EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII.

The Air Products & Chemicals, Inc./New Orleans Facility is subject to Best Practicable Control Technology Performance Standards (BPT) effluent limitation guidelines listed below:

Manufacturing Operation

Guideline

Inorganic Chemicals Manufacturing      40 CFR 415 Subpart AW

Of all the manufactured products at the New Orleans facility, only the Oxygen and Nitrogen production is guideline regulated (40 CFR 415 Subpart AW). The effluent guidelines have subparts for Carbon Dioxide production (Subpart AF) and Hydrogen production (Subpart AO). However, the Carbon Dioxide subpart is reserved. The Hydrogen production category (Subpart AO) applies to the production of hydrogen as a refinery by-product. The hydrogen that is produced at the New Orleans facility is not a refinery by-product.

The BPJ technology based mass limitations established in the permit for COD, TSS, Oil & Grease, and Ammonia are calculated based upon concentrations utilized in the prior NPDES permits. These concentrations are as follows:

COD: Daily Max – 200 mg/l  
Monthly Avg – 100 mg/l

TSS: Daily Max – 70 mg/l  
Monthly Avg – 30 mg/l

Oil & Grease: Daily Max – 15 mg/l  
Monthly Avg – 10 mg/l

Ammonia: Daily Max – 75 mg/l  
Monthly Avg – 35 mg/l

In the prior NPDES permit, ammonia limitations were based upon production of ammonia. However, the former ammonia plant ceased operation and was converted into the “C” H<sub>2</sub> plant, which went online in 1995. The plant still, however, uses ammonia in the process. Therefore, the facility still discharges lower levels of ammonia. The wastewaters that have the potential to contain ammonia include CO<sub>2</sub> plant condensate, boiler blowdown, cooling tower side-stream filter backwash and demineralizer regeneration.

The effluent limitations established in the permit for oil & grease are based upon a combination of production-based limitations (as per 40 CFR 415 Subpart AW) and BPJ allocations.

40 CFR 415 Subpart AW production factors –

Oil & Grease: Daily Max factor = 0.002 lbs/1000 lbs  
Monthly Avg factor = 0.001 lbs/1000 lbs

Oxygen and Nitrogen production (as per the Dec. 23, 2004 application) = 294.7 1000 lbs/day

**Oil & Grease Production Allocation –**

Daily Max: 294.7 1000 lbs/day X 0.002 lbs/1000 lbs = 0.59 lbs/day  
Monthly Avg: 294.7 1000 lbs/day X 0.001 lbs/1000 lbs = 0.29 lbs/day

**Non-Production Based Allocations –**

Oil & Grease: Calculated based upon flows from the following wastewaters - CO<sub>2</sub> Plant condensate, and stormwater runoff

Daily Max: 15 mg/l X 8.34 X 0.05 MGD = 6.25 lbs/day  
Monthly Avg: 10 mg/l X 8.34 X 0.05 MGD = 4.17 lbs/day

Total Loading (Production allocation + wastewater allocations):

Daily Max – 6.25 lbs/day + 0.59 lbs/day = **6.84 lbs/day**  
Monthly Avg - 4.17 lbs/day + 0.29 lbs/day = **4.46 lbs/day**

COD: Calculated based upon flows from the following wastewaters – CO<sub>2</sub> plant condensate, ASU plant condensate, boiler blowdown, cooling tower blowdown, demineralizer regeneration, reverse osmosis reject water, and stormwater runoff

$$\begin{aligned}\text{Daily Max: } & 200 \text{ mg/l} \times 8.34 \times 0.535 \text{ MGD} = \mathbf{892 \text{ lbs/day}} \\ \text{Monthly Avg: } & 100 \text{ mg/l} \times 8.34 \times 0.535 \text{ MGD} = \mathbf{446 \text{ lbs/day}}\end{aligned}$$

TSS: Calculated based upon flows from the following wastewaters – CO<sub>2</sub> plant condensate, ASU plant condensate, boiler blowdown, cooling tower blowdown, demineralizer regeneration, reverse osmosis reject water, and stormwater runoff

$$\begin{aligned}\text{Daily Max: } & 70 \text{ mg/l} \times 8.34 \times 0.535 \text{ MGD} = \mathbf{312 \text{ lbs/day}} \\ \text{Monthly Avg: } & 30 \text{ mg/l} \times 8.34 \times 0.535 \text{ MGD} = \mathbf{134 \text{ lbs/day}}\end{aligned}$$

Ammonia: Calculated based upon flows from the following wastewaters – CO<sub>2</sub> plant condensate, boiler blowdown, cooling tower side-stream filter backwash and demineralizer regeneration

$$\begin{aligned}\text{Daily Max: } & 75 \text{ mg/l} \times 8.34 \times 0.0456 \text{ MGD} = \mathbf{28.5 \text{ lbs/day}} \\ \text{Monthly Avg: } & 35 \text{ mg/l} \times 8.34 \times 0.0456 \text{ MGD} = \mathbf{13.3 \text{ lbs/day}}\end{aligned}$$

Proposed effluent limitations and basis of permit limitations are found below:

**Outfall 001** – The continuous discharge of previously monitored sanitary wastewater from Internal Outfall 101, reverse osmosis reject water, excess reverse osmosis permeate, cooling tower blowdown, boiler blowdown, demineralizer regeneration, cooling tower side-stream filter backwash, condensate from the CO<sub>2</sub> and ASU plants, scrubber water, stormwater runoff, equipment wash waters, air conditioning condensate, steam condensate, service lines leaks, fire protection wastewater and hydrostatic testing waters.

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	Daily Max		
Flow	Report	Report	Continuous	LAC 33:IX.2707.1.1.b, previous permit
pH	Continuous <sup>(1)</sup>	Continuous <sup>(1)</sup>	Continuous	40 CFR 415.492, Previous permit
Temperature	Report	Report	Continuous	Previous permit

COD	446 lbs/day	892 lbs/day	1/week	BPJ
TSS	134 lbs/day	312 lbs/day	1/week	BPJ
Ammonia (as N)	13.3 lbs/day	28.5 lbs/day	1/week	BPJ
Oil & Grease	4.46 lbs/day	6.84 lbs/day	1/week	40 CFR 415.492 and BPJ
Biomonitoring	See Section D (Biomonitoring Requirements) below	See Section D (Biomonitoring Requirements) below	1/3 months	See Section D (Biomonitoring Requirements) below

- (i) Where a permittee continuously measures the pH of wastewater as a requirement, the permittee shall maintain the pH of such wastewater within the range set forth in the permit, except that excursions from the range are permitted, provided:
- The total time during which the pH values are outside the required range of pH values shall not exceed 446 minutes in any calendar month; and
  - No individual excursion from the range of pH values shall exceed 60 minutes.

**Outfall 101 - Treated sanitary wastewater**

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	Weekly Avg		
Flow	Report	Report	1/6 months	LAC 33:IX.2707.1.1.b
BOD	---	45 mg/l	1/6 months	LPDES Sanitary General Permits
TSS	---	45 mg/l	1/6 months	LPDES Sanitary General Permits
Fecal Coliform	---	43 col/100 ml	1/6 months	LPDES Sanitary General Permits <sup>(1)</sup>

- (1) In accordance with LAC 33:IX.1113(C)(5)(d), and LDEQ's sanitary general permits, a fecal coliform limitation of 43 col/100 ml has been established in the permit because the effluent is discharged to a subsegment designated for oyster propagation.

**Outfall 002** - The intermittent discharge of overflow from the wastewater sump including primarily stormwater, but potentially including the following wastewaters: previously monitored sanitary wastewater from Internal Outfall 101, reverse osmosis reject water, excess reverse osmosis permeate, cooling tower blowdown, boiler blowdown, demineralizer regeneration, cooling tower side-stream filter backwash, condensate from the CO<sub>2</sub> and ASU plants, scrubber water, equipment wash waters, air conditioning condensate, steam condensate, service lines leaks, fire protection wastewater and hydrostatic testing waters

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	Daily Max		
Flow	Report	Report	1/week	LAC 33:IX.2707.1.1.b
TOC	---	50	1/week	LDEQ Stormwater Guidance <sup>(1)</sup>
Oil & Grease	---	15	1/week	LDEQ Stormwater Guidance <sup>(1)</sup>
pH	6.0 s.u. (Min)	9.0 s.u. (Max)	1/week	LDEQ Stormwater Guidance <sup>(1)</sup>

- (1) LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6)

#### B. MONITORING FREQUENCIES

All monitoring frequencies are based upon best professional judgement and are consistent with frequencies previously applied to other major facilities. Whole Effluent Toxicity testing frequency is based upon recommendations from the Municipal and General Water Permits Section (see Appendix B).

#### C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limits by following guidance procedures established in the Permitting Guidance Document for

Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001.  
Calculations, results, and documentation are given in Appendix C.

In accordance with 40 CFR § 122.44 (d)(1)/LAC 33:IX.2707.D.1, the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix C.

The following pollutants received water quality based effluent limits:

None

Minimum quantification levels (MQL's) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. They are also listed in Part II of the permit.

To further ensure compliance with 40 CFR 122.44(d)(I), whole effluent toxicity testing has been established for Outfall 001 (See Section VIII.D below).

#### D. BIOMONITORING REQUIREMENTS

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall 001 are as follows:

##### TOXICITY TESTS

NOEC, Pass/Fail [0/1],  
Lethality, Static Renewal,  
7-Day Chronic,  
Menidia beryllina

##### FREQUENCY<sup>(1)</sup>

1/3 months

NOEC, Value [%], Lethality, Static Renewal, 7-Day Chronic, <u>Menidia beryllina</u>	1/3 months
NOEC, Value [%], Growth, Static Renewal, 7-Day Chronic, <u>Menidia beryllina</u>	1/3 months
NOEC, Pass/Fail [0/1], Growth, Static Renewal, 7-Day Chronic, <u>Menidia beryllina</u>	1/3 months
NOEC, Value [%], Coefficient of Variation, Static Renewal, 7-Day Chronic, <u>Menidia beryllina</u>	1/3 months
NOEC, Pass/Fail [0/1], Lethality, Static Renewal, 7-Day Chronic, <u>Mysidopsis bahia</u>	1/3 months
NOEC, Value [%], Lethality, Static Renewal, 7-Day Chronic <u>Mysidopsis bahia</u>	1/3 months
NOEC, Value [%], Growth, Static Renewal, 7-Day Chronic, <u>Mysidopsis bahia</u>	1/3 months
NOEC, Pass/Fail [0/1], Growth, Static Renewal, 7-Day Chronic, <u>Mysidopsis bahia</u>	1/3 months
NOEC, Value [%], Coefficient of Variation, Static Renewal, 7-Day Chronic, <u>Mysidopsis bahia</u>	1/3 months

- (1) If no lethal or sub-lethal effects are demonstrated after the first year of quarterly testing, the permittee may certify fulfillment of the WET testing requirements in writing to the permitting authority. If granted, the monitoring frequency for the test species may be reduced to not less than 1/year for the *Menidia beryllina* and not less than twice per year for the *Mysidopsis bahia*. Upon expiration of the permit, the monitoring frequency for both species shall revert to once per quarter until the permit is re-issued.

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to this Office. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

#### Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be:

Existing discharge location: 30%, 40%, 53%, 71%, and 95%. The low-flow effluent concentration (critical dilution) is defined as 95% effluent.

Proposed discharge location: 2%, 3%, 4%, 6%, and 8%. The low-flow effluent concentration (critical dilution) is defined as 6% effluent.



#### **IX. Compliance History/DMR Review:**

The Air Products & Chemicals/New Orleans Facility was issued an Administrative Order (Docket No. VI-90-108) from the U.S. EPA on April 5, 1990. This Order noted numerous effluent limitation excursions. The Order further established interim limitations for COD, TSS, Oil & Grease, and Ammonia, which were higher than the existing permit limitations, based upon increased production. EPA issued another Administrative Order to the facility (Docket No. VI-92-0336) on September 22, 1992. This Order re-established the previous interim limitations for COD and TSS. Another Administrative Order (Docket No. CWA-6-0055-00) was issued on April 13, 2000. This Order established interim limitations for COD and TSS (limited in accordance with the previous Orders); and oil & grease, ammonia and total zinc (limited in accordance with the 1986 NPDES permit). In September of 2000, the U.S. Environmental Protection Agency relinquished enforcement authority over the facility to LDEQ.

On August 25, 2005, LDEQ issued a Compliance Order (WE-C-05-0313) which cited a violation observed during an inspection dated September 25, 2003. It was revealed that the facility failed to maintain the required temperature of its TSS drying ovens. The compliance order further listed several permit excursions. It is noted however, that most of the permit excursions listed in the 2005 compliance order were not in exceedance of the interim limitations established in the April 13, 2000 Administrative Order. For the purposes of this permit, only the reported data which exceeded the interim limitations established in the April 13, 2000 Order have been summarized below.

A Discharge Monitoring Report review was done for the period of January 2000 until September 2005. The following reported permit excursions were noted:

<u>Date</u>	<u>Parameter</u>	<u>Outfall</u>	<u>Reported Value</u>	<u>Permit Limits</u>
10/31/2000	Total Zinc	001	8.3 lbs/day (max)	7.2 lbs/day (max)
2/28/2005	pH	001	10.3 s.u (max).	9.0 s.u. (max)
2/28/2005	TSS	001	546 lbs/day (max)	350 lbs/day (max)

It is noted that the Air Products & Chemicals, Inc./New Orleans Facility was greatly affected by Hurricane Katrina (August 2005). The facility experienced severe flooding and lost many of its records. No DMR data was reported during the months which the facility was shutdown.

#### **X. Endangered Species:**

The receiving waterbody, Subsegment 041601 of the Pontchartrain River Basin are not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated October 21, 2005 from Watson (FWS) to Gautreaux (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit

is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

**XI. Historic Sites:**

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

**XII. Tentative Determination:**

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to issue a permit for the discharge described in the application.

**XIII. Variances:**

No requests for variances have been received by this Office.

**XIV. Public Notices:**

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

A public notice will be published in a local newspaper of general circulation and in the Office of Environmental Services Public Notice Mailing List

**XV. TMDL Waterbodies:**

Subsegment 041601, is listed on LDEQ's Final 2004 303(d) list as impaired for Pathogen Indicators. To date no TMDLs have been completed for this waterbody. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as

imposed by a TMDL. The facility has the potential to discharge pathogen indicators from its sanitary wastewaters. Therefore, the permit has established fecal coliform limitations. However, the permittee is proposing to reroute all of its sanitary wastewater to the local POTW. When this is accomplished, the facility will no longer have the potential to discharge fecal coliform.

#### **XVI. Stormwater Pollution Prevention Plan (SWP3) Requirements:**

In accordance with LAC 33:IX.2707.I.3 and 4 [40 CFR 122.44(I)(.3) and (4)], a Part II condition is proposed for applicability to all stormwater discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. The Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit, along with other requirements. If the permittee maintains other plans that contain duplicative information, that plan could be incorporated by reference into the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasure Plan (SPCC), Best Management Plan (BMP), Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of storm water associated with industrial activity, as defined at LAC 33:IX.2511.B.14 [(40 CFR 122.26(b)(14))].

#### **XVII. Relocation of Final Outfall 001:**

The permittee proposes to relocate Final Outfall 001 to the Michoud Canal. This project will consist of constructing a new sump/pump station, and a 3,600 feet pipeline. In accordance with 40 CFR 122.47(a)(1), (3) and (4), the permit has established a schedule for completion of this project. (See Part II, Paragraph I).

# **Appendix A**

## **Effluent data**

## **Outfall 001**

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.  
SEE INSTRUCTIONS.

EPA ID NUMBER (copy from Item 1 of Form 1) LA0003280

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)

OUTFALL NO. 001

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT										3. UNITS (Specify if blank)	4. INTAKE (optional)			
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANALYSES	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES					
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS		(1) CONCENTRATION	(2) MASS						
a. Biochemical Oxygen Demand (BOD)	17	NA	NA	NA	NA	NA	1	mg/L	NA						
b. Chemical Oxygen Demand (COD)	112	769	63.0	472	49.9	353	312	mg/L	lbs/day						
c. Total Organic Carbon (TOC)	6.42	NA	NA	NA	NA	NA	1	mg/L	NA						
d. Total Suspended Solids (TSS)	35.8	231	15.25	101	8.75	61.63	312	mg/L	lbs/day						
e. Ammonia (as N)	26.3	222	8.94	70	70	30.64	312	mg/L	lbs/day						
f. Flow	VALUE	2.10	VALUE	1.15	VALUE	0.726	Cont. Record	NA	MGD	VALUE					
g. Temperature (winter)	VALUE	78	VALUE	76	VALUE	NA	Cont. Record		°F	VALUE					
h. Temperature (summer)	VALUE	99	VALUE	86	VALUE	NA	Cont. Record		°F	VALUE					
i. pH	MINIMUM 6.3	MAXIMUM 9.0	MINIMUM NA	MAXIMUM NA			Cont. Record	STANDARD UNITS							

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. BE- LIEVED PRESENT	b. BE- LIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)		X							NA	NA				
b. Chlorine, Total Residual	X			<0.030					1	mg/L				
c. Color		X							NA	NA				
d. Fecoliform	X			>240					1	col/100 mL				
e. Fluoride (16931-48-3)		X							NA	NA				
f. Nitrate-Nitrite (as N)		X							NA	NA				

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'		3. EFFLUENT						4. UNITS		5. LIMITS (optional)			
	a. RE- LIEVED PRESENT	b. RE- LIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVERAGE VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF TESTS
			(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS				(1) CON- CENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)		X							NA	NA				
h. Oil and Grease	X		<5.0	0	<5.0	0	<5.0	0	312	mg/L	lbs/day	(Conc. reported as zero on DMR)		
i. Phosphorous (as P), Total (7723-11-0)	X		1.2						1	mg/L				
j. Radioactivity (1) Alpha, Total		X							NA	NA				
(2) Beta, Total		X							NA	NA				
(3) Radium, Total		X							NA	NA				
(4) Radium, 226, Total		X							NA	NA				
k. Sulfate (as SO <sub>4</sub> ) (14808-79-8)	X		234						1	mg/L				
l. Sulfide (as S)		X							NA	NA				
m. Sulfite (as SO <sub>3</sub> ) (14265-45-3)		X							NA	NA				
n. Surfactants		X							NA	NA				
o. Aluminum, Total (7429-90-5)		X							NA	NA				
p. Barium, Total (7440-39-3)		X							NA	NA				
q. Boron, Total (7440-42-9)		X							NA	NA				
r. Cobalt, Total (7440-48-4)		X	<0.010						1	mg/L				
s. Iron, Total (7439-99-6)	X		0.387						1	mg/L				
t. Magnesium, Total (7439-95-1)	X		11.1						1	mg/L				
u. Molybdenum, Total (7439-98-7)		X	<0.010						1	mg/L				
v. Manganese, Total (7439-96-5)		X							NA	NA				
w. Tin, Total (7440-31-5)		X							NA	NA				
x. Titanium, Total (7440-32-6)		X							NA	NA				

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## CONTINUED FROM PAGE 3 OF FORM 2-C

EPA ID NUMBER (copy from Item 1 of Form 1) OUTFALL NUMBER  
LA0003280 001

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GCMS fractions you must test for. Mark "X" in column 2-a for all such GCMS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GCMS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acetone, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4,6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part, please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)				
	a. TESTING REQUIRED	b. BE- LIEVED PRESENT	c. BE- LIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVERAGE VALUE (if available)		d. NO. OF ANAL. YES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANAL. YES	
				(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS				(1) CON- CENTRATION	(2) MASS		
<b>METALS, CYANIDE AND TOTAL PHENOLS</b>																
1M. Antimony, Total (7440-36-0)	X			<0.020						1	mg/L					
2M. Arsenic, Total (7440-33-2)	X			<0.010						1	mg/L					
3M. Beryllium, Total (7440-41-7)	X			<0.010						1	mg/L					
4M. Cadmium, Total (7440-43-9)	X			0.00386						1	mg/L					
5M. Chromium, Total (7440-47-3)	X			<0.010						1	mg/L					
6M. Copper, Total (7440-50-8)	X			<0.010						1	mg/L					
7M. Lead, Total (7439-92-1)	X			0.0119						1	mg/L					
8M. Mercury, Total (7439-97-6)	X			<0.0002						1	mg/L					
9M. Nickel, Total (7440-02-0)	X			<0.005						1	mg/L					
10M. Selenium, Total (7782-49-2)	X			0.0336						1	mg/L					
11M. Silver, Total (7440-22-4)	X			<0.010						1	mg/L					
12M. Thallium, Total (7440-28-0)	X			0.041						1	mg/L					
13M. Zinc, Total (7440-66-6)	X			0.968	2.60	0.16	0.995	0.07	0.37	312	mg/L	lbs/day				
14M. Cyanide, Total (57-12-b)	X			<0.010						1	mg/L					
15M. Phenols, Total	X			<0.010						1	mg/L					
<b>DIOXIN</b>																
2,3,7,8 Tetra-chlorodibenzo-P-dioxin (1764-01-6)			X													

## DESCRIBE RESULTS

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1. POLLUTANT AND GAS PHASE NUMBER (if available)	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. LONG TERM AVERAGE VALUE (if available)		b. NO. OF ANAL. YSES	a. CONCENTRATION	b. MASS	c. LONG TERM AVERAGE VALUE (if available)	d. NO. OF ANAL. YSES	a. CONCENTRATION	b. MASS	c. LONG TERM AVERAGE VALUE (if available)	d. NO. OF ANAL. YSES		
	a. TESTING REQUIRED	b. BE- LIEVED	c. BE- LIEVED	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVERAGE VALUE (if available)		5. LONG TERM AVERAGE VALUE (if available)														
				(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS													
GC/MS FRACTION - VOLATILE COMPOUNDS																								
1V. Acrolein (107-02-5)	X			<0.050								1	mg/L											
2V. Acrylonitrile (107-13-1)	X			<0.050								1	mg/L											
3V. Benzene (71-43-2)	X			<0.005								1	mg/L											
4V. Bis (Chloro- methyl) Ether (542-98-1)				NO LONGER A PRIORITY POLLUTANT								1	mg/L											
5V. Bromoform (75-25-2)	X			<0.005								1	mg/L											
6V. Carbon Tetrachloride (56-23-5)	X			<0.005								1	mg/L											
7V. Chlorobenzene (108-90-7)	X			<0.005								1	mg/L											
8V. Chlorodi- bromomethane (124-49-1)	X			<0.005								1	mg/L											
9V. Chloroethane (75-00-3)	X			<0.010								1	mg/L											
10V. 2-Chloro- ethylvinyl Ether (110-75-9)	X			<0.010								1	mg/L											
11V. Chloroform (67-66-3)	X			<0.005								1	mg/L											
12V. Dichloro- bromomethane (75-27-4)	X			<0.005								1	mg/L											
13V. Dichloro- difluoromethane (75-71-9)				NO LONGER A PRIORITY POLLUTANT								1	mg/L											
14V. 1,1-Dichloro- ethane (75-34-3)	X			<0.005								1	mg/L											
15V. 1,2-Dichloro- ethane (107-06-2)	X			<0.005								1	mg/L											
16V. 1,1-Dichloro- ethylene (75-35-4)	X			<0.005								1	mg/L											
17V. 1,2-Dichloro- propane (78-97-5)	X			<0.005								1	mg/L											
18V. 1,3-Dichloro- propylene (542-75-6)	X			<0.005								1	mg/L											
19V. Ethylbenzene (100-41-4)	X			<0.005								1	mg/L											
20V. Methyl Bromide (74-83-9)	X			<0.010								1	mg/L											
21V. Methyl Chloride (74-87-3)	X			<0.010								1	mg/L											

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT								4. UNITS		5. HIGHLIGHTED INFORMATION		
	a. TEST-REQ	b. RE-LIEVED	c. BE-LIEVED	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANAL-YES	a. CONCEN-TRATION	b. MASS	6. HIGHLIGHTED INFORMATION		b. NO. OF ANAL-YES	
				(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS				a. LONG TERM AVERAGE VALUE (1) CON- CENTRATION	(2) MASS		
GC/MS FRACTION - VOLATILE COMPOUNDS (Continued)																
22V. Methylene Chloride (75-09-2)	X			<0.005						1	mg/L					
23V. 1,1,2,2-Tetra-chloroethane (79-34-5)	X			<0.005						1	mg/L					
24V. Trichloro-ethylene (127-18-4)	X			<0.005						1	mg/L					
25V. Toluene (108-88-3)	X			<0.005						1	mg/L					
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<0.005						1	mg/L					
27V. 1,1,1-Trichloroethane (71-55-6)	X			<0.005						1	mg/L					
28V. 1,1,2-Trichloroethane (79-00-5)	X			<0.005						1	mg/L					
29V. Trichloro-ethylene (79-01-6)	X			<0.005						1	mg/L					
30V. Trichloro-fluoromethane (75-69-4)		NO LONGER A PRIORITY POLLUTANT														
31V. Vinyl Chloride (75-01-4)	X			<0.010						1	mg/L					
GC/MS FRACTION - ACID COMPOUNDS																
1A. 2-Chlorophenol (95-57-8)	X			<0.005						1	mg/L					
2A. 2,4-Dichloro-phenol (120-83-2)	X			<0.005						1	mg/L					
3A. 2,4-Dimethyl-phenol (105-67-9)	X			<0.005						1	mg/L					
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.010						1	mg/L					
5A. 2,4-Dinitro-phenol (51-28-5)	X			<0.020						1	mg/L					
6A. 2-Nitrophenol (83-75-5)	X			<0.010						1	mg/L					
7A. 4-Nitrophenol (100-02-7)	X			<0.020						1	mg/L					
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.005						1	mg/L					
9A. Pentachloro-phenol (87-86-5)	X			<0.010						1	mg/L					
10A. Phenol (108-95-2)	X			<0.005						1	mg/L					
11A. 2,4,6-Tri-chlorophenol (128-06-2)	X			<0.005						1	mg/L					

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT						4. UNITS		5. IIRFRA (optional)	
	a. TEST NUMBER	b. BE-LEVEL PRESENT	c. BE-LEVEL ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVG. VALUE (if available) (1) CONCENTRATION (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	b. MASS	b. IIRFRA	

## GCMS FRACTION - BASE/NEUTRAL COMPOUNDS

18. Acenaphthylene (83-32-9)	X			<0.005			1	mg/L				
28. Acenaphthylene (208-96-8)	X			<0.005			1	mg/L				
38. Anthracene (120-12-7)	X			<0.005			1	mg/L				
48. Benzidine (92-87-5)	X			<0.020			1	mg/L				
58. Benzo (a) Anthracene (56-55-3)	X			<0.005			1	mg/L				
68. Benzo (a) Pyrene (50-32-9)	X			<0.005			1	mg/L				
78. 3,4-Benzofluoranthene (205-99-2)	X			<0.005			1	mg/L				
88. Benzo (ghi) Perylene (191-24-2)	X			<0.005			1	mg/L				
98. Benzo (k) Fluoranthene (207-08-9)	X			<0.005			1	mg/L				
108. Bis (2-Chloro-ethoxy) Methane (111-91-1)	X			<0.005			1	mg/L				
118. Bis (2-Chloro-ethyl) Ether (111-44-1)	X			<0.005			1	mg/L				
128. Bis (2-Chloro-propyl) Ether (102-60-1)	X			<0.005			1	mg/L				
138. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)	X			<0.005			1	mg/L				
148. 4-Bromophenyl-Phenyl Ether (101-55-3)	X			<0.005			1	mg/L				
158. Butyl Benzyl Phthalate (85-68-7)	X			<0.005			1	mg/L				
168. 2-Chloronaphthalene (91-58-7)	X			<0.005			1	mg/L				
178. 4-Chlorophenyl-Phenyl Ether (7005-72-3)	X			<0.005			1	mg/L				
188. Chrysene (218-01-9)	X			<0.005			1	mg/L				
198. Dibenzo (a,h) Anthracene (53-70-3)	X			<0.005			1	mg/L				
208. 1,2-Dichlorobenzene (95-50-1)	X			<0.005			1	mg/L				
218. 1,3-Dichlorobenzene (541-73-1)	X			<0.005			1	mg/L				

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1. POLLUTANT AID CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT				4. UNITS		5. HPAIC TOPICUS		6. NO. OF ANAL- YSES	a. CONCEN- TRATION	b. MASS	7. LONG TERM AVERAGE VALUE		8. NO. OF ANAL- YSES
	a. TEST- ING (REQUIRED)	b. REC- EVER (REQUIRED)	c. BE- LIEVED (REQUIRED)	a. MAXIMUM DAILY VALUE (1) CON- CENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CON- CENTRATION	(2) MASS	c. LONG TERM AVER. VALUE (if available) (1) CON- CENTRATION	(2) MASS	d. NO. OF ANAL- YSES	a. LONG TERM AVERAGE VALUE (1) CON- CENTRATION	(2) MASS					
228. 1,4 - Dichloro- benzene (106-46-7)	X			<0.005						1	mg/L						
238. 3,3' - Dichloro- benzidine (91-94-1)	X			<0.005						1	mg/L						
248. Diethyl- phthalate (84-66-2)	X			<0.005						1	mg/L						
256. Dimethyl- phthalate (131-11-3)	X			<0.005						1	mg/L						
266. Di-N-Butyl- phthalate (94-74-2)	X			<0.005						1	mg/L						
278. 2,4 - Dinitro- toluene (121-14-2)	X			<0.005						1	mg/L						
286. 2,6 - Dinitro- toluene (606-20-2)	X			<0.005						1	mg/L						
296. Di-N-Octyl- phthalate (117-84-0)	X			<0.005						1	mg/L						
306. 1,2 - Diphenyl- hydrazine (as azo- benzene) (122-66-7)	X			N/A						1	mg/L						
316. Fluoranthene (206-44-0)	X			<0.005						1	mg/L						
326. Fluorene (96-73-7)	X			<0.005						1	mg/L						
336. Hexachloro- benzene (118-74-1)	X			<0.005						1	mg/L						
348. Hexa- chlorobutadiene (87-68-3)	X			<0.005						1	mg/L						
356. Hexachloro- cyclopentadiene (77-47-4)	X			<0.010						1	mg/L						
366. Hexachloro- ethane (67-72-1)	X			<0.005						1	mg/L						
376. Indeno 1,2,3-cd Pyrene (193-39-5)	X			<0.005						1	mg/L						
386. Isophthalic acid (130-54-1)	X			<0.005						1	mg/L						
396. Naphthalene (91-20-3)	X			<0.005						1	mg/L						
406. Nitrobenzene (98-95-3)	X			<0.005						1	mg/L						
416. N,N-Di- sodiumethylamine (162-75-9)	X			N/A						1	mg/L						
426. N-Nitrodi- N-Propylamine (161-64-7)	X			<0.010						1	mg/L						

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## CONTINUED FROM THE FRONT

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OUTFALL 001

1. POLLUTANT AND CAS NUMBER (if available)	2. MAPA, X			3. EFFLUENT						4. UNITS		5. LIMITS (optional)			
	a. TEST METHOD	b. RECOVERED	c. RECOVERED	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANAL. YRS.	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. LIMIT
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASENEUTRAL COMPOUNDS (continued)															
438. 1,1-Methoxy-2-phenylbenzene (25-30-6)	X			<0.005						1	mg/L				
438. Phenanthrene (85-01-9)	X			<0.005						1	mg/L				
438. Pyrene (129-00-0)	X			<0.005						1	mg/L				
408. 1,2,4-Trichlorobenzene (120-82-1)	X			<0.005						1	mg/L				
GC/MS FRACTION - PESTICIDES															
1P. Aldrin (309-00-2)			X							1	mg/L				
2P. $\alpha$ -BHC (319-84-6)			X							1	mg/L				
3P. $\beta$ -BHC (319-85-7)			X							1	mg/L				
4P. $\gamma$ -BHC (59-59-9)			X							1	mg/L				
5P. $\delta$ -BHC (319-86-8)			X							1	mg/L				
6P. Chlordane (57-74-9)			X							1	mg/L				
7P. 1,4'-DDT (50-29-9)			X							1	mg/L				
8P. 1,4'-DDE (72-55-9)			X							1	mg/L				
9P. 1,1'-DDD (72-54-9)			X							1	mg/L				
10P. Dieldrin (60-57-1)			X							1	mg/L				
11P. $\alpha$ -Endosulfan (115-29-7)			X							1	mg/L				
12P. $\beta$ -Endosulfan (115-29-7)			X							1	mg/L				
13P. Endosulfan Sulfate (1091-07-9)			X							1	mg/L				
14P. Endrin (72-20-9)			X							1	mg/L				
15P. Endrin Aldehyde (7421-93-4)			X							1	mg/L				
16P. Heptachlor (76-44-8)			X							1	mg/L				

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EPA ID NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
LA0003280	001

1. PESTICIDE AND AML CAS NO. (if available)	2. MARKS			3. EFFLUENT						4. UNITS		5. HLT AVE (continued)			
	a. TEST ING	b. RE- LIEVED PRESENT	c. RE- LIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVG. VALUE (if available)		d. NO. OF ANAL. YES	a. CONCENTR- TATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. LONG TERM AVERAGE YES
				(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS	(1) CON- CENTRATION	(2) MASS						
GC/MS FRACTION - PESTICIDES (continued)															
17P. Heptachlor Epoxide (10024-57-3)			X							1	mg/L				
18P. PCB-1242 (53169-21-9)			X							1	mg/L				
19P. PCB-1254 (11097-69-1)			X							1	mg/L				
20P. PCB-1221 (11104-29-2)			X							1	mg/L				
21P. PCB-1232 (11141-15-5)			X							1	mg/L				
22P. PCB-1248 (12672-29-6)			X							1	mg/L				
23P. PCB-1260 (11096-82-5)			X							1	mg/L				
24P. PCB-1016 (12674-11-2)			X							1	mg/L				
25P. Toxaphene (8001-35-2)			X							1	mg/L				

Simulation of EPA Form 3510-2C (8-90)

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# **Appendix B**

## **Biomonitoring Recommendation**

# BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: LA0003280  
 Facility Name: Air Products & Chemicals – New Orleans Facility  
 Previous Critical Dilution: 100%

Proposed Critical Dilution: Existing Outfall 001: 95%  
 Proposed Outfall 001: 6%

Date of Review: 01/11/05 Name of Reviewer: Kim Gunderson

Recommended Frequency by Species:

*Menidia beryllina* (Inland Silverside minnow): Once/Quarter<sup>1</sup>  
*Mysidopsis bahia* (Mysid shrimp): Once/Quarter<sup>1</sup>

Recommended Dilution Series<sup>2</sup>: Existing Outfall 001: 30%, 40%, 53%, 71%, and 95%  
 Proposed Outfall 001: 2%, 3%, 4%, 6%, and 8%

Number of Tests Performed during previous 5 years by Species:

*Menidia beryllina* (Inland Silverside minnow): 0<sup>3</sup>  
*Mysidopsis bahia* (Mysid shrimp): 0<sup>3</sup>

Number of Failed Tests during previous 5 years by Species:

*Menidia beryllina* (Inland Silverside minnow): 0  
*Mysidopsis bahia* (Mysid shrimp): 0

Failed Test Dates during previous 5 years by Species:

*Menidia beryllina* (Inland Silverside minnow): N/A – Testing of species was not required  
*Mysidopsis bahia* (Mysid shrimp): N/A – Testing of species was not required

Previous TRE Activities: N/A – No previous TRE Activities

<sup>1</sup> If there are no lethal or sub-lethal effects demonstrated after the first year of quarterly testing, the permittee may certify fulfillment of the WET testing requirements in writing to the permitting authority. If granted, the monitoring frequency for the test species may be reduced to not less than once per year for the less sensitive species (usually *Menidia beryllina*) and not less than twice per year for the more sensitive species (usually *Mysidopsis bahia*). Upon expiration of the permit, the monitoring frequency for both species shall revert to once per quarter until the permit is re-issued.

<sup>2</sup> Since the permittee has indicated the possibility of relocating Outfall 001, LDEQ is providing a dilution series for the existing Outfall 001 and proposed Outfall 001.

<sup>3</sup> Biomonitoring requirements contained in previous permit LA0003280, effective September 16, 1986, required biomonitoring quarterly for two years. Therefore, there are no biomonitoring tests in the past five years.



## Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

Air Products & Chemicals – New Orleans Facility owns and operates an industrial gas production facility in New Orleans, Orleans Parish, Louisiana. NPDES Permit LA0003280, effective September 16, 1986, contained biomonitoring requirements as follows: The permittee shall determine if 80% or greater of the culture of test organisms will survive by use of the "Range-Finding Screening Test" set out in "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms". Organisms for this test were *Daphnia sp.* if the effluent is less than five parts per thousand salinity or *Mysidopsis sp.* if the effluent is equal to or greater than five parts per thousand salinity. The screening test was to be conducted within 60 days of the effectiveness of the biomonitoring requirements and were to be conducted quarterly for two years using a static method for 24 hours with an effluent sample of 100% by volume.

To adequately assess the facility's effluent potential for receiving stream and/or aquatic species toxicity, it is recommended that marine chronic biomonitoring be an effluent characteristic of Outfall 001 (discharge of 1.17 MGD of reverse osmosis reject water, excess reverse osmosis permeate, cooling tower blowdown, boiler blowdown, demineralizer regeneration, cooling tower side-stream filter backwash, condensate, scrubber water, previously monitored sanitary wastewater, equipment wash waters, air conditioning condensate, steam condensate, service lines leaks, fire protection wastewater, and hydrostatic testing waters) in LA0003280. Since the permittee has indicated the possibility of relocating Outfall 001, LDEQ is providing a dilution series for the existing Outfall 001 and proposed Outfall 001. For the EXISTING Outfall 001, the effluent dilution series shall be 30%, 40%, 53%, 71%, and 95% concentrations, with 95% being defined as the critical dilution. For the PROPOSED Outfall 001, the effluent dilution series shall be 2%, 3%, 4%, 6%, and 8% concentrations, with 6% being defined as the critical dilution.

In accordance with the Environmental Protection Agency (Region 6) WET testing frequency acceleration(s), the biomonitoring frequency shall be once per quarter for *Menidia beryllina* and *Mysidopsis bahia*. If there are no significant lethal or sub-lethal effects demonstrated at or below the critical dilution during the first four quarters of testing, the permittee may certify fulfillment of the WET testing requirements to the permitting authority and WET testing may be reduced to not less than once per six months for the more sensitive species (*Mysidopsis bahia*) and not less than once per year for the less sensitive species (*Menidia beryllina*) for the remainder of the term of the permit. Upon expiration of the permit, the monitoring frequency for both test species shall revert to once per quarter until the permit is re-issued.

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, EPA Region 6 Post-Third Round Whole Effluent Toxicity Testing Frequencies (Revised June 30, 2000), and the Best Professional Judgement (BPJ) of the reviewer.

# **Appendix C**

## **Water Quality Spreadsheet and Documentation**

Spreadsheet for Existing Discharge  
Location –

Roadside ditch thence to Maxent  
Canal thence to Intracoastal  
Waterway

Developer: Bruce Fielding Time: 11:28 AM

Software: Lotus 4.0

LA0112780 / AI 83613

Revision date: 12/13/02

## Water Quality Screen for Air Products &amp; Chemicals/New Orleans Facility

## Input variables:

## Receiving Water Characteristics:

## Dilution:

ZID Fs = 0.1

## Toxicity Dilution Series:

Biomonitoring dilution: 0.947652

Dilution Series Factor: 0.75

Receiving Water Name= Roadside ditch thence to Maxent Canal

Critical flow (Qr) cfs= 0.1

MZ Fs = 1

Harm. mean/avg tidal cfs= 1

Critical Qr (MGD)= 0.06463

Drinking Water=1 HHNPCR=2

Harm. Mean (MGD)= 0.6463

Marine, 1=y, 0=n

ZID Dilution = 0.994506

Rec. Water Hardness= 1655

MZ Dilution = 0.947652

Rec. Water TSS= 4.43

HHnc Dilution= 0.947652

Fisch/Specific=1,Stream=0

HHC Dilution= 0.644167

Diffuser Ratio=

ZID Upstream = 0.005524

MZ Upstream = 0.055239

MZhhnc Upstream= 0.055239

## Effluent Characteristics:

Permittee= Air Products &amp; Chemicals/New Orleans Facility

Permit Number= LA0003280/AI 2062

Facility flow (Qef),MGD= 1.17

MZhhnc Upstream= 0.552393

ZID Hardness= ---

Outfall Number = 001

MZ Hardness= ---

Eff. data, 2=lbs/day

ZID TSS= ---

MQL, 2=lbs/day

MZ TSS= ---

Effluent Hardness= N/A

Multipliers:

Effluent TSS= N/A

WLAa --&gt; LTAA 0.32

WQBL ind. 0=y, 1=n

WLAC --&gt; LTAC 0.53

Acute/Chr. ratio 0=n, 1=y 0

LTA a,c--&gt;WQBL avg 1.31

Aquatic,acute only=1=y,0=n

LTA a,c--&gt;WQBL max 3.11

LTA h --&gt; WQBL max 2.38

WQBL limit/report 2.13

## Page Numbering/Labeling

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Page Numbers 1=y, 0=n 1

Input Page # 1=y, 0=n 1

## Fischer/Site Specific inputs:

Pipe=1,Canal=2,Specific=3

Pipe width, feet

ZID plume dist., feet

MZ plume dist., feet

HHnc plume dist., feet

HHC plume dist., feet

## Fischer/site specific dilutions:

F/specific ZID Dilution = ---

F/specific MZ Dilution = ---

F/specific HHnc Dilution= ---

F/specific HHC Dilution= ---

## Receiving Stream:

Default Hardness= 25

Default TSS= 10

99 Crit., 1=y, 0=n 1

## Partition Coefficients; Dissolved--&gt;Total

## METALS

## FW

Total Arsenic 1.717415

Total Cadmium 4.296306

Chromium III 4.728958

Chromium VI 1

Total Copper 2.531434

Total Lead 4.770846

Total Mercury 3.354515

Total Nickel 1.929287

Total Zinc 2.95358

## Aquatic Life, Dissolved

## Metal Criteria, ug/L

METALS ACUTE CHRONIC

Arsenic 339.8 150

Cadmium 660.0963 8.13226

Chromium III 5464.629 1772.669

Chromium VI 15.712 10.582

Copper 259.2898 135.1456

Lead 1110.737 43.28382

Mercury 1.734 0.012

Nickel 15204.92 1688.629

Zinc 1233.938 1126.773

## Site Specific Multiplier Values:

CV = ---

N = ---

WLAa --&gt; LTAA ---

WLAC --&gt; LTAC ---

LTA a,c--&gt;WQBL avg ---

LTA a,c--&gt;WQBL max ---

LTA h --&gt; WQBL max ---

Air Products & Chemicals/New Orleans Facility  
LA0003280/AI 2062

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic Parameters	CuEffluent Instream Conc. ug/L	Effluent /Tech (Avg) ug/L	Effluent /Tech (Max) ug/L	MQLEffluent 1=No 0-95 % ug/L	95th % estimate Non-Tech ug/L		Numerical Criteria		HH	
							Acute FW ug/L	Chronic FW ug/L	HHNDW ug/L	Carcinogen Indicator "C"
NONCONVENTIONAL										
Total Phenols (4AAP)				5			700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenoc-										
acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			583.5775	257.6122		
Total Cadmium		3.86	3.86	1	1		2835.976	34.93868		
Chromium III				10			25842	8382.879		
Chromium VI				10			15.712	10.582		
Total Copper				10			656.375	342.1122		
Total Lead		11.9	11.9	5	1		5299.154	206.5004		
Total Mercury				0.2			5.816729	0.040254		
Total Nickel				40			29334.66	3257.849		
Total Zinc		160	968	20	1		3644.534	3328.013		
Total Cyanide				20			45.9	5.2	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-005					7.2E-007	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform				10			2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-										
ethane				10			932	466	1.8	C

Air Products & Chemicals/New Orleans Facility  
LA0003280/AI 2062

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAc	WLAh	LTAA	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A, C, HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	703.8668	369.3338	52.76197	225.2374	195.7469	52.76197	52.76197	52.76197	125.5735	0.514841	1.225321	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	385.1157	202.6059	---	123.237	107.3812	---	107.3812	140.6693	333.9554	1.372623	3.25867	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenoc-												
acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-												
oxy) propionic acid												
(2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	586.8011	271.8425	---	187.7764	144.0765	---	144.0765	188.7403	448.078	1.84169	4.372256	no
Total Cadmium	2851.641	36.86867	---	912.5253	19.54039	---	19.54039	25.59792	60.77062	0.249779	0.592988	no
Chromium III	25984.75	8845.943	---	8315.121	4688.35	---	4688.35	6141.738	14580.77	59.92986	142.2762	no
Chromium VI	15.79879	11.16654	---	5.055613	5.918267	---	5.055613	6.622854	15.72296	0.064624	0.153421	no
Total Copper	660.0008	361.0103	---	211.2003	191.3354	---	191.3354	250.6494	595.0532	2.445787	5.80641	no
Total Lead	5328.426	217.9074	---	1705.096	115.4909	---	115.4909	151.2931	359.1767	1.476288	3.504774	no
Total Mercury	5.84886	0.042478	---	1.871635	0.022513	---	0.022513	0.029492	0.070016	0.000288	0.000693	no
Total Nickel	29496.7	3437.81	---	9438.944	1822.039	---	1822.039	2386.872	5666.543	23.29062	55.29299	no
Total Zinc	3664.667	3511.85	---	1172.693	1861.28	---	1172.693	1536.228	3647.076	14.99021	35.58744	no
Total Cyanide	46.15355	5.487244	13553.49	14.76914	2.90824	13553.49	2.90824	3.809794	9.044625	0.037175	0.088256	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.000001	---	---	0.000001	0.000001	0.000001	0.000003	1.1E-008	2.6E-008	no
VOLATILE COMPOUNDS												
Benzene	2261.423	1187.144	19.40491	723.6555	629.1864	19.40491	19.40491	19.40491	46.1837	0.189349	0.450651	no
Bromoform	2946.185	1545.926	53.86804	942.7792	819.3406	53.86804	53.86804	53.86804	128.2059	0.525634	1.251008	no
Bromodichloromethane	---	---	5.122897	---	---	5.122897	5.122897	5.122897	12.1925	0.049988	0.118972	no
Carbon Tetrachloride	2745.08	1440.402	1.862872	878.4257	763.4129	1.862872	1.862872	1.862872	4.433635	0.018178	0.043263	no
Chloroform	2905.964	1524.821	108.6675	929.9085	808.155	108.6675	108.6675	108.6675	258.6287	1.060356	2.523647	no
Dibromochloromethane	---	---	7.886157	---	---	7.886157	7.886157	7.886157	18.76905	0.076952	0.183145	no
1,2-Dichloroethane	11865.18	6225.912	10.55627	3796.858	3299.733	10.55627	10.55627	10.55627	25.12393	0.103006	0.245154	no
1,1-Dichloroethylene	1166.408	612.0388	0.900388	373.2505	324.3806	0.900388	0.900388	0.900388	2.142924	0.008786	0.02091	no
1,3-Dichloropropylene	609.3475	319.7375	171.7824	194.9912	169.4609	171.7824	169.4609	221.9938	527.0233	2.166171	5.142588	no
Ethylbenzene	3217.677	1688.383	8547.438	1029.657	894.8429	8547.438	894.8429	1172.244	2782.962	11.43852	27.15558	no
Methyl Chloride	55303.82	29019.08	---	17697.22	15380.11	---	15380.11	20147.95	47832.15	196.5996	466.7366	no
Methylene Chloride	19406.61	10183.06	135.0582	6210.116	5397.021	135.0582	135.0582	135.0582	321.4385	1.317871	3.136533	no
1,1,2,2-Tetrachloro-												
ethane	937.1483	491.7415	2.794308	299.8875	260.623	2.794308	2.794308	2.794308	6.650452	0.027266	0.064894	no

LA0003280/AI 2062

[illegible]

LA0003280/AY 2062

(+1)	(+12)	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)	(+20)	(+21)	(+22)	(+23)
Toxic	WLAa	WLAc	WLAh	LTAa	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
								001	001	001	001	
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	1297.126	680.6294	3.880983	415.0803	360.7336	3.880983	3.880983	3.880983	9.236739	0.03787	0.09013	no
Toluene	1277.015	670.077	48752.06	408.6449	355.1408	48752.06	355.1408	465.2344	1104.488	4.539665	10.77737	no
1,1,1-Trichloroethane	5309.166	2785.832	---	1698.933	1476.491	---	1476.491	1934.203	4591.887	18.87357	44.80671	no
1,1,2-Trichloroethane	1809.943	949.7154	10.71151	579.1818	503.3492	10.71151	10.71151	10.71151	25.4934	0.104521	0.24876	no
Trichloroethylene	3921.543	2057.717	32.60026	1254.894	1090.59	32.60026	32.60026	32.60026	77.58861	0.318107	0.757094	no
Vinyl Chloride	---	---	55.57568	---	---	55.57568	55.57568	55.57568	132.2701	0.542296	1.290665	no
ACID COMPOUNDS												
2-Chlorophenol	259.4252	136.1259	133.3822	83.01606	72.14671	133.3822	72.14671	94.51219	224.3763	0.922231	2.189419	no
2,4-Dichlorophenol	203.1158	106.5792	245.4487	64.99707	56.48696	245.4487	56.48696	73.99792	175.6744	0.722057	1.714196	no
BASE NEUTRAL COMPOUNDS												
Benzidine	251.381	131.9049	0.000264	80.44191	69.9096	0.000264	0.000264	0.000264	0.000628	0.000003	0.000006	no
Hexachlorobenzene	---	---	0.000388	---	---	0.000388	0.000388	0.000388	0.000924	0.000004	0.000009	no
Hexachlorabutadiene	5.128172	1.076344	0.170763	1.641015	0.570462	0.170763	0.170763	0.170763	0.406417	0.001666	0.003966	no
PESTICIDES												
Aldrin	3.016572	---	0.000621	0.965303	---	0.000621	0.000621	0.000621	0.001478	0.000006	0.000014	no
Hexachlorocyclohexane (gamma BHC, Lindane)	5.329277	0.2216	0.310479	1.705369	0.117448	0.310479	0.117448	0.153857	0.365264	0.001501	0.003564	no
Chlordane	2.413257	0.004538	0.000295	0.772242	0.002405	0.000295	0.000295	0.000295	0.000702	0.000003	0.000007	no
4,4'-DDT	1.106076	0.001055	0.000295	0.353944	0.000559	0.000295	0.000295	0.000295	0.000702	0.000003	0.000007	no
4,4'-DDE	52.79001	11.08001	0.000295	16.8928	5.872407	0.000295	0.000295	0.000295	0.000702	0.000003	0.000007	no
4,4'-DDD	0.030166	0.006331	0.000419	0.009653	0.003356	0.000419	0.000419	0.000419	0.000998	0.000004	0.00001	no
Dieldrin	0.238711	0.058777	0.000078	0.076388	0.031152	0.000078	0.000078	0.000078	0.000185	7.6E-007	0.000002	no
Endosulfan	0.221215	0.059093	0.675353	0.070789	0.03132	0.675353	0.03132	0.041029	0.097404	0.0004	0.00095	no
Endrin	0.086877	0.039571	0.274362	0.027801	0.020973	0.274362	0.020973	0.027474	0.065226	0.000268	0.000636	no
Heptachlor	0.522872	0.00401	0.000109	0.167319	0.002125	0.000109	0.000109	0.000109	0.000259	0.000001	0.000003	no
Toxaphene	0.734032	0.000211	0.000373	0.23489	0.000112	0.000373	0.000112	0.000147	0.000348	0.000001	0.000003	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	19.10495	11.60763	---	6.113586	6.152045	---	6.113586	8.008797	19.01325	0.078148	0.185527	no
Ammonia	---	4220.957	---	---	2237.107	---	2237.107	2930.611	6957.404	28.59631	67.88896	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no



# Spreadsheet for Proposed Discharge Location –

## Michoud Canal

Developer: Bruce Fielding Time: 11:29 AM

Software: Lotus 4.0

LA0112780 / AI 83613

Revision date: 12/13/02

## Water Quality Screen for Air Products &amp; Chemicals/New Orleans Facility

## Input variables:

## Receiving Water Characteristics:

Receiving Water Name= Michoud Canal

Critical flow (Qr) cfs= 29.4

Harm. mean/avg tidal cfs= 88.2

Drinking Water=1 HHNPCR=2

Marine, 1=y, 0=n

Rec. Water Hardness= 1655

Rec. Water TSS= 4.43

Fisch/Specific=1,Stream=0

Diffuser Ratio=

## Effluent Characteristics:

Permittee= Air Products &amp; Chemicals/New Orleans Facility

Permit Number= LA0003280/AI 2062

Facility flow (Qef),MGD= 1.17

Outfall Number = 001

Eff. data, 2=lbs/day

MQL, 2=lbs/day

Effluent Hardness= N/A

Effluent TSS= N/A

WQBL ind. 0=y, 1=n

Acute/Chr. ratio 0=n, 1=y 0

Aquatic,acute only1=y,0=n

## Page Numbering/Labeling

Appendix Appendix C-1

Page Numbers 1=y, 0=n 1

Input Page # 1=y, 0=n 1

## Fischer/Site Specific inputs:

Pipe=1,Canal=2,Specific=3

Pipe width, feet

ZID plume dist., feet

MZ plume dist., feet

HHnc plume dist., feet

HHc plume dist., feet

## Fischer/site specific dilutions:

F/specific ZID Dilution = ---

F/specific MZ Dilution = ---

F/specific HHnc Dilution= ---

F/specific HHc Dilution= ---

## Dilution:

ZID Fs = 0.1

MZ Fs = 1

Critical Qr (MGD)=19.00122

Harm. Mean (MGD)= 57.00366

ZID Dilution = 0.381092

MZ Dilution = 0.058003

HHnc Dilution= 0.058003

HHc Dilution= 0.020112

ZID Upstream = 1.624036

MZ Upstream = 16.24036

MZhhnc Upstream= 16.24036

MZhhc Upstream= 48.72108

ZID Hardness= ---

MZ Hardness= ---

ZID TSS= ---

MZ TSS= ---

## Multipliers:

WLAA --&gt; LTAA 0.32

WLAC --&gt; LTAC 0.53

LTA a,c--&gt;WQBL avg 1.31

LTA a,c--&gt;WQBL max 3.11

LTA h --&gt; WQBL max 2.38

WQBL-limit/report 2.13

WLA Fraction 1

WQBL Fraction 1

## Conversions:

ug/L--&gt;lbs/day Qef0.009758

ug/L--&gt;lbs/day Qeo 0

ug/L--&gt;lbs/day Qr 0.245196

lbs/day--&gt;ug/L Qeo102.4821

lbs/day--&gt;ug/L Qef102.4821

diss--&gt;tot 1=y0=n 1

Cu diss--&gt;tot1=y0=n 1

cfs--&gt;MGD 0.6463

Receiving Stream:

Default Hardness= 25

Default TSS= 10

99 Crit., 1=y, 0=n 1

## Toxicity Dilution Series:

Biomonitoring dilution: 0.058003

Dilution Series Factor: 0.75

## Percent Effluent

Dilution No. 1 7.734%

Dilution No. 2 5.8003%

Dilution No. 3 4.3503%

Dilution No. 4 3.2627%

Dilution No. 5 2.4470%

## Partition Coefficients; Dissolved--&gt;Total

## METALS

## FW

Total Arsenic 1.717415

Total Cadmium 4.296306

Chromium III 4.728958

Chromium VI 1

Total Copper 2.531434

Total Lead 4.770846

Total Mercury 3.354515

Total Nickel 1.929287

Total Zinc 2.95358

## Aquatic Life, Dissolved

## Metal Criteria, ug/L

## METALS ACUTE CHRONIC

Arsenic 339.8 150

Cadmium 660.0963 8.13226

Chromium III 5464.629 1772.669

Chromium VI 15.712 10.582

Copper 259.2898 135.1456

Lead 1110.737 43.28382

Mercury 1.734 0.012

Nickel 15204.92 1688.629

Zinc 1233.938 1126.773

## Site Specific Multiplier Values:

CV = ---

N = ---

WLAA --&gt; LTAA ---

WLAC --&gt; LTAC ---

LTA a,c--&gt;WQBL avg ---

LTA a,c--&gt;WQBL max ---

LTA h --&gt; WQBL max ---

## Air Products &amp; Chemicals/New Orleans Facility

LA0003280/AI 2062

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	CuEffluent Effluent		MQLEffluent 95th %		Numerical Criteria		HH			
Parameters	Instream	/Tech	/Tech	1=No 95%	estimate	Acute	Chronic	HHNDW	Carcinogen	Indicator
	Conc.	(Avg)	(Max)	0=95 %	Non-Tech	FW	FW	ug/L	ug/L	"C"
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
NONCONVENTIONAL										
Total Phenols (4AAP)				5		700	350	50		
3-Chlorophenol				10						
4-Chlorophenol				10		383	192			
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenoc-										
acetic acid (2,4-D)				---						
2- (2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10		583.5775	257.6122			
Total Cadmium		3.86	3.86	1	1	2835.976	34.93868			
Chromium III				10		25842	8382.879			
Chromium VI				10		15.712	10.582			
Total Copper				10		656.375	342.1122			
Total Lead		11.9	11.9	5	1	5299.154	206.5004			
Total Mercury				0.2		5.816729	0.040254			
Total Nickel				40		29334.66	3257.849			
Total Zinc		160	968	20	1	3644.534	3328.013			
Total Cyanide				20		45.9	5.2	12844		
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-005				7.2E-007		C
VOLATILE COMPOUNDS										
Benzene				10		2249	1125	12.5		C
Bromoform				10		2930	1465	34.7		C
Bromodichloromethane				10				3.3		C
Carbon Tetrachloride				10		2730	1365	1.2		C
Chloroform				10		2890	1445	70		C
Dibromochloromethane				10				5.08		C
1,2-Dichloroethane				10		11800	5900	6.8		C
1,1-Dichloroethylene				10		1160	580	0.58		C
1,3-Dichloropropylene				10		606	303	162.79		
Ethylbenzene				10		3200	1600	8100		
Methyl Chloride				50		55000	27500			
Methylene Chloride				20		19300	9650	87		C
1,1,2,2-Tetrachloro-										
ethane				10		932	466	1.8		C

Air Products & Chemicals/New Orleans Facility  
LA0003280/AI 2062

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic Parameters	WLAa Acute	WLAc Chronic	WLAh HHNDW	LTAA Acute	LTAc Chronic	LTAh HHNDW	Limiting A,C,HH	WQBL Avg 001	WQBL Max 001	WQBL Avg 001	WQBL Max 001	Need WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	1836.825	6034.126	862.0179	587.784	3198.087	862.0179	587.784	769.9971	1828.008	7.513478	17.83734	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	1005.006	3310.149	---	321.6018	1754.379	---	321.6018	421.2984	1000.182	4.110946	9.759573	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenoc- acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen- oxy) propionic acid (2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	1531.328	4441.327	---	490.0251	2353.903	---	490.0251	641.9328	1523.978	6.263852	14.87067	no
Total Cadmium	7441.702	602.3553	---	2381.345	319.2483	---	319.2483	418.2153	992.8623	4.080861	9.688152	no
Chromium III	67810.35	144523.8	---	21699.31	76597.64	---	21699.31	28426.1	67484.86	277.3762	658.5037	no
Chromium VI	41.22885	182.4375	---	13.19323	96.69186	---	13.19323	17.28313	41.03095	0.168645	0.400372	no
Total Copper	1722.352	5898.138	---	551.1525	3126.013	---	551.1525	722.0098	1714.084	7.045227	16.72569	no
Total Lead	13905.17	3560.141	---	4449.654	1886.875	---	1886.875	2471.806	5868.181	24.11939	57.26054	no
Total Mercury	15.26331	0.693997	---	4.884258	0.367818	---	0.367818	0.481842	1.143914	0.004702	0.011162	no
Total Nickel	76975.19	56166.48	---	24632.06	29768.24	---	24632.06	32268	76605.71	314.8647	747.5032	no
Total Zinc	9563.389	57376.13	---	3060.285	30409.35	---	3060.285	4008.973	9517.485	39.11875	92.86972	no
Total Cyanide	120.4432	89.64987	221435.2	38.54184	47.51443	221435.2	38.54184	50.48981	119.8651	0.492669	1.16962	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.000036	---	---	0.000036	0.000036	0.000036	0.000085	3.5E-007	8.3E-007	no
VOLATILE COMPOUNDS												
Benzene	5901.457	19395.4	621.5135	1888.466	10279.56	621.5135	621.5135	621.5135	1479.202	6.064604	14.43376	no
Bromoform	7688.425	25257.13	1725.321	2460.296	13386.28	1725.321	1725.321	1725.321	4106.265	16.83534	40.06811	no
Bromodichloromethane	---	---	164.0796	---	---	164.0796	164.0796	164.0796	390.5093	1.601055	3.810512	no
Carbon Tetrachloride	7163.618	23533.09	59.66529	2292.358	12472.54	59.66529	59.66529	59.66529	142.0034	0.582202	1.385641	no
Chloroform	7583.464	24912.32	3480.475	2426.708	13203.53	3480.475	2426.708	3178.988	7547.063	31.01993	73.64273	no
Dibromochloromethane	---	---	252.5831	---	---	252.5831	252.5831	252.5831	601.1477	2.464655	5.865879	no
1,2-Dichloroethane	30963.62	101718.1	338.1033	9908.36	53910.6	338.1033	338.1033	338.1033	804.6859	3.299145	7.851964	no
1,1-Dichloroethylene	3043.882	9999.408	28.83822	974.0421	5299.686	28.83822	28.83822	28.83822	68.63497	0.281398	0.669726	no
1,3-Dichloropropylene	1590.166	5223.829	2806.558	508.853	2768.629	2806.558	508.853	666.5975	1582.533	6.504525	15.44204	no
Ethylbenzene	8396.915	27584.57	139646.9	2687.013	14619.82	139646.9	2687.013	3519.987	8356.61	34.34733	81.54213	no
Methyl Chloride	144322	474109.9	---	46183.03	251278.2	---	46183.03	60499.77	143629.2	590.3447	1401.505	no
Methylene Chloride	50643.89	166369.5	4325.734	16206.05	88175.82	4325.734	4325.734	4325.734	10295.25	42.20964	100.459	no
1,1,2,2-Tetrachloro- ethane	2445.601	8034.007	89.49794	782.5925	4258.024	89.49794	89.49794	89.49794	213.0051	0.873303	2.078461	no

LA0003280/AI 2062

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic	CuEffluent Effluent			MQLEffluent 95th %		Numerical Criteria				HH
Parameters	Instream	/Tech	/Tech	1=No	95%	estimate	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)	0=95	%	Non-Tech	FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene				10			1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	C
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane										
(gamma BHC, Lindane)				0.05			5.3	0.21	0.2	C
Chlordane				0.2			2.4	0.0043	0.00019	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			0.2374	0.0557	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.0864	0.0375	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
Toxaphene				5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Col. (col/100ml)							19	11		
Chlorine										
Ammonia								4000		
Chlorides										
Sulfates										
TDS										
Goldbook Values:										

LA0003280/AI 2062

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic Parameters	WLAa	WLAc	WLAh	LTAA	LTAc	LTAh	Limiting	WQBL	WQBL	WQBL	WQBL	Need
	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
								001	001	001	001	
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	3385.006	11120.03	124.3027	1083.202	5893.617	124.3027	124.3027	124.3027	295.8404	1.212921	2.886752	no
Toluene	3332.526	10947.63	796504.6	1066.408	5802.243	796504.6	1066.408	1396.995	3316.529	13.6316	12.36203	no
1,1,1-Trichloroethane	13854.91	45514.55	---	4433.571	24122.71	---	4433.571	5807.978	13788.41	56.67309	134.5445	no
1,1,2-Trichloroethane	4723.265	15516.32	343.0754	1511.445	8223.651	343.0754	343.0754	343.0754	816.5195	3.347661	7.967434	no
Trichloroethylene	10233.74	33618.7	1044.143	3274.797	17817.91	1044.143	1044.143	1044.143	2485.059	10.18853	24.24871	no
Vinyl Chloride	---	---	1780.015	---	---	1780.015	1780.015	1780.015	4236.435	17.36903	41.33828	no
ACID COMPOUNDS												
2-Chlorophenol	677.0013	2224.006	2179.181	216.6404	1178.723	2179.181	216.6404	283.7989	673.7517	2.769253	6.574334	no
2,4-Dichlorophenol	530.0553	1741.276	4010.107	169.6177	922.8764	4010.107	169.6177	222.1992	527.511	2.168175	5.147347	no
BASE NEUTRAL COMPOUNDS												
Benzidine	656.009	2155.045	0.008453	209.9229	1142.174	0.008453	0.008453	0.008453	0.020117	0.000082	0.000196	no
Hexachlorobenzene	---	---	0.01243	---	---	0.01243	0.01243	0.01243	0.029584	0.000121	0.000289	no
Hexachlorabutadiene	13.38258	17.58517	5.469318	4.282427	9.320138	5.469318	4.282427	5.609979	13.31835	0.054741	0.129958	no
PESTICIDES												
Aldrin	7.872108	---	0.019888	2.519074	---	0.019888	0.019888	0.019888	0.047334	0.000194	0.000462	no
Hexachlorocyclohexane (gamma BHC, Lindane)	13.90739	3.620475	9.944215	4.450365	1.918852	9.944215	1.918852	2.513696	5.96763	0.024528	0.058231	no
Chlordane	6.297686	0.074134	0.009447	2.01526	0.039291	0.009447	0.009447	0.009447	0.022484	0.000092	0.000219	no
4,4'-DDT	2.886439	0.01724	0.009447	0.923661	0.009137	0.009447	0.009137	0.01197	0.028417	0.000117	0.000277	no
4,4'-DDE	137.7619	181.0238	0.009447	44.0838	95.9426	0.009447	0.009447	0.009447	0.022484	0.000092	0.000219	no
4,4'-DDD	0.078721	0.103442	0.013425	0.025191	0.054824	0.013425	0.013425	0.013425	0.031951	0.000131	0.000312	no
Dieldrin	0.622946	0.960288	0.002486	0.199343	0.508953	0.002486	0.002486	0.002486	0.005917	0.000024	0.000058	no
Endosulfan	0.577288	0.96546	11.03383	0.184732	0.511694	11.03383	0.184732	0.241999	0.574517	0.002361	0.005606	no
Endrin	0.226717	0.646513	4.482493	0.072549	0.342652	4.482493	0.072549	0.09504	0.225628	0.000927	0.002202	no
Heptachlor	1.364499	0.065513	0.00348	0.43664	0.034722	0.00348	0.00348	0.00348	0.008284	0.000034	0.000081	no
Toxaphene	1.915546	0.003448	0.011933	0.612975	0.001827	0.011933	0.001827	0.002394	0.005683	0.000023	0.000055	no
Other Parameters:												
Fecal Col. (col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	49.85668	189.6439	---	15.95414	100.5113	---	15.95414	20.89992	49.61737	0.203937	0.484156	no
Ammonia	---	68961.44	---	---	36549.56	---	36549.56	47879.92	113669.1	467.2027	1109.161	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX C-2  
LA0003280 / AI 2062

Documentation and Explanation of Water Quality Screen  
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (\*1) or (\*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Existing - Roadside ditch thence to Maxent Canal thence to  
Intracoastal Waterway  
Proposed - Michoud Canal

Critical Flow, Qrc (cfs): Existing - 0.1, Proposed - 29.4

Harmonic Mean Flow, Qrh (cfs): Existing - 1.0, Proposed - 88.2

Segment No.: 041601

Receiving Stream Hardness (mg/L): 1,655

Receiving Stream TSS (mg/L): 4.43

MZ Stream Factor, Fs: 1.0

Plume distance, Pf: N/A

Effluent Characteristics:

Company: Air Products & Chemicals, Inc./New Orleans Facility

Facility flow, Qe (MGD): 1.17

Effluent Hardness (mg/L): N/A

Effluent TSS (mg/L): N/A

Pipe/canal width, Pw: N/A

Permit Number: LA0003280

Variable Definition:

Qrc, critical flow of receiving stream, cfs

Qrh, harmonic mean flow of the receiving stream, cfs

Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D

Pw = Pipe width or canal width in feet

Qe, total facility flow, MGD

Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)

Cu, ambient concentration, ug/L

Cr, numerical criteria from LAC.IX.1113, Table 1

WLA, wasteload allocation

LTA, long term average calculations

WQBL, effluent water quality based limit

ZID, Zone of Initial Dilution in % effluent

MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Q_e}{(Q_{rc} \times 0.6463 \times F_s + Q_e)}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Fs} \times \text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.8) \text{ Pw } \pi^{1/2}}{\text{Pf}}$$

$$\text{Critical Dilution} = \frac{(2.38) (\text{Pw}^{1/2})}{(\text{Pf})^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}}{(2.8) \text{ Pw } \pi^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}^{1/2}}{2.38 \text{ Pw}^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{\text{Qe}}{(\text{Qrc} \times 0.6463 + \text{Qe})}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{\text{Qe}}{(\text{Qrh} \times 0.6463 + \text{Qe})}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Qrh} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.8) \text{ Pw } \pi^{1/2}}{\text{Pf}}$$

$$\text{Critical Dilution} = \frac{(2.38) (\text{Pw}^{1/2})}{(\text{Pf})^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}^*}{(2.8) \text{ Pw } \pi^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr}-\text{Cu}) \text{ Pf}^{1/2}*}{2.38 \text{ Pw}^{1/2}}$$

\* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.



If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr - Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:

$$LTAA = WLAa \times 0.32$$

$$LTAC = WLAc \times 0.53$$

$$LTAh = WLAh$$

WQBL Calculations:

Select most limiting LTA to calculate daily max and daily avg WQBL

If aquatic life LTA is more limiting:

$$\text{Daily Maximum} = \text{Min}(LTAA, LTAC) \times 3.11$$

$$\text{Daily Average} = \text{Min}(LTAC, LTAC) \times 1.31$$

If human health LTA is more limiting:

$$\text{Daily Maximum} = LTAh \times 2.38$$

$$\text{Daily Average} = LTAh$$

Mass Balance Formulas:

$$\text{mass (lbs/day)}: (\text{ug/L}) \times 1/1000 \times (\text{flow, MGD}) \times 8.34 = \text{lbs/day}$$

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{(\text{flow, MGD}) \times 8.34 \times 1/1000} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

- (\*1) Parameter being screened.
- (\*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
- (\*3) Daily average effluent value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
- (\*4) Daily maximum value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
- (\*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

- (\*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.
- (\*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (\*18) - (\*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.
- (\*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X ZID Dilution + Receiving Stream Hardness X (1-ZID Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X ZID Dilution + Receiving Stream TSS X (1-ZID Dilution)).

Hardness Dependent Criteria:

<u>Metal</u>	<u>Formula</u>
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

<u>Metal</u>	<u>Multiplier</u>
Arsenic	$1 + 0.48 \times \text{TSS}^{-0.73} \times \text{TSS}$
Cadmium	$1 + 4.00 \times \text{TSS}^{-1.13} \times \text{TSS}$
Chromium III	$1 + 3.36 \times \text{TSS}^{-0.93} \times \text{TSS}$
Copper	$1 + 1.04 \times \text{TSS}^{-0.74} \times \text{TSS}$
Lead	$1 + 2.80 \times \text{TSS}^{-0.80} \times \text{TSS}$
Mercury	$1 + 2.90 \times \text{TSS}^{-1.14} \times \text{TSS}$
Nickel	$1 + 0.49 \times \text{TSS}^{-0.57} \times \text{TSS}$
Zinc	$1 + 1.25 \times \text{TSS}^{-0.70} \times \text{TSS}$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

<u>Metal</u>	<u>Multiplier</u>
Copper	$1 + (10^{4.86} \times \text{TSS}^{-0.72} \times \text{TSS}) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times \text{TSS}^{-0.85} \times \text{TSS}) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times \text{TSS}^{-0.52} \times \text{TSS}) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

- (\*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X MZ Dilution + Receiving Stream Hardness X (1-MZ Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X MZ Dilution + Receiving Stream TSS X (1-MZ Dilution)).
- Hardness dependent criteria:

<u>Metal</u>	<u>Formula</u>
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (\*8), acute numerical criteria for aquatic life protection.

- (\*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primary contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.
- (\*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.
- (\*12) Wasteload Allocation for acute aquatic criteria (WLAA). Dilution type WLAA is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.
- Dilution WLAA formulas for streams:
- WLAA = (Cr/Dilution Factor) -  $\frac{(Fs \times Q_{rc} \times 0.6463 \times Cu)}{Q_e}$

Qe

Dilution WLAA formulas for static water bodies:

$$WLAA = (Cr - Cu) / \text{Dilution Factor}$$

Cr represents aquatic acute numerical criteria from column (\*8).

If Cu data is unavailable or inadequate, assume Cu=0

- (\*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.

Dilution WLAc formula:

$$WLAc = (Cr / \text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:

$$WLAc = (Cr - Cu) / \text{Dilution Factor}$$

Cr represents aquatic chronic numerical criteria from column (\*9).

If Cu data is unavailable or inadequate, assume Cu=0

- (\*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr / \text{Dilution Factor}) - \frac{(Fs \times Qrc, Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:

$$WLAh = (Cr - Cu) / \text{Dilution Factor}$$

Cr represents human health numerical criteria from column (\*10).

If Cu data is unavailable or inadequate, assume Cu=0

- (\*15) Long Term Average for aquatic numerical criteria (LTAA). WLAA numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32.  $WLAA \times 0.32 = LTAA$
- (\*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53.  $WLAc \times 0.53 = LTAc$
- (\*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1.  $WLAh \times 1 = LTAh$
- (\*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation.
- (\*19) End of pipe Water Quality Based Limit (WQBL) maximum 30-day daily average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ( $LTA_{\text{limiting aquatic}} \times 1.31 = WQBL_{\text{daily average}}$ ). If human health criteria was the most limiting criteria then  $LTAh = WQBL_{\text{daily average}}$ .
- (\*20) End of pipe Water Quality Based Limit (WQBL) 30-day daily maximum in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine

the daily maximum WQBL ( $LTA_{\text{limiting aquatic}} \times 3.11 = WQBL_{\text{daily max}}$ ). If human health criteria was the most limiting criteria then LTA<sub>h</sub> is multiplied by 2.38 to determine the daily maximum WQBL ( $LTA_{\text{limiting aquatic}} \times 2.38 = WQBL_{\text{daily max}}$ ).

- (\*21) End of pipe Water Quality Based Limit (WQBL) maximum 30-day daily average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Daily average WQBL,  $\text{ug/l/1000} \times \text{facility flow, MGD} \times 8.34 = \text{daily average WQBL, lbs/day}$ .
- (\*22) End of pipe Water Quality Based Limit (WQBL) 30 day daily maximum in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL,  $\text{ug/l/1000} \times \text{facility flow, MGD} \times 8.34 = \text{daily maximum WQBL, lbs/day}$ .
- (\*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.